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Instructional innovation should progress through three major stages before general implementation--development, field testing, and dissemination. During the 1965-66 school year, joint planning was undertaken by the staff of the Learning Research and Development Center (LRDC) at the University of Pittsburgh and by Research for Better Schools (RBS), the regional educational laboratory, to design plans to field test and disseminate the instructional innovation titled Individually Prescribed Instruction (IPI), which had undergone 2 years of developmental work. IPI was first implemented as a pilot study in five elementary schools. This study involved inservice teacher training experiences in the original setting in which the innovation had been developed, a limited exchange of personnel between the experimental and pilot schools, and a close monitoring of the pilot schools by the RBS staff. The study was later expanded to include approximately 91 schools. Five organizations were utilized to implement the programs prior to the field testing--the schools, regional laboratories, a publishing house, RBS, and LRDC. The field testing program is considered an essential aspect in implementing innovations. (HW)

Rationale and Plan for Monitoring the Field Testing of an Instructional Innovation: Individually Prescribed Instruction*

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Rationale and Plan for Monitoring the Field Testing of an Instructional Innovation: Individually Prescribed Instruction[1]

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The field of education is replete with examples of instructional innovations, such as programmed instruction, team teaching and language laboratories, that have shown to be valuable in the context in which they were originally developed but, once transferred to new settings, have met with less success than had been anticipated. This apparent lack of success in these new settings may be a result of factors other than those related to the innovation itself; examples of such factors might be those associated with the processes of field testing and dissemination. In few cases is adequate attention directed towards carefully planning the monitoring of the implementation, field testing, demonstration, and diffusion of an innovation. In some instances, where component aspects of an instructional system have been skillfully packaged, some degree of success has been achieved in a valid implementation in new settings. For example, a few programmed instruction courses were implemented quite successfully in a wide variety of situations. However, when an innovation involves a total instructional system or a major part thereof, a true and valid implementation has been difficult to achieve and would seem to require carefully planned steps in development and field testing and careful monitoring of the dissemination process. Therefore, it is necessary to examine the three major stages through which an instructional innovation would normally progress before general implementation is successful: development, field testing, and dissemination.

The development stage should result in the defining of the specific characteristics of the innovation in a restricted number of settings in which the initial development has taken place. During this stage, the innovation is modified and improved until a desired level of operational efficiency

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has been achieved. After the innovation has proved successful in these original settings, planning must be undertaken to field test the innovation in a variety of new circumstances.

It is during the field testing stage that attention is focused on the performance characteristics of the innovation as it operated in a variety of situations. Performance information must be made available in much the same way as is true when an individual buys a particular component such as a transistor. One simply does not purchase just "any" transistor that happens to be available, but rather carefully examines the performance requirements of the operation to be performed and then selects a transistor that possesses the requisite characteristics. During this field testing stage not only is the innovation generally modified and improved through the examination of its performance in a variety of situations, but performance criteria must be established so that statements can be made concerning the degree of operational efficiency that can be obtained under specific sets of conditions. Hopefully, education will become increasingly specific regarding product performance, for it would seem that this is an essential step in the development of a technology of education.

One of the first steps that must be taken when an innovation is being field tested is that the new settings must be identified and described and the innovation must be replicated in these settings. Only if the essential features identified in the developmental stages are implemented in the new field testing situation can valid and reliable data be collected to assess the effectiveness of the innovation for the purpose of providing direction for further modification. In order to insure that this replication has been made, monitoring procedures must be established to permit assessment of how the system is operating. Without such a monitoring system to certify successful replication, the collection of information to evaluate the effectiveness of the innovation in achieving its goals is wasted effort. It is only after a valid replication has been achieved that primary purposes of the field testing stage can be accomplished.

Once the field testing stage has been completed, and assuming the innovation still evidences sufficient potential, the demonstration and

dissemination stage of the innovation can be undertaken. In this stage, a monitoring system similar to that established in the field testing stage would be used to insure that the innovation is transferred successfully to each new setting. This type of monitoring would permit an assessment of the degree which the essential features are evidenced and whether or not the innovation has retained enough of its essential features so that a school could be identified as having a particular innovation in operation. The primary difference between the monitoring system developed for the field testing and that structured for the dissemination of the innovation is that the field testing system employs a greater amount of detail while the dissemination system is primarily concerned with only the most critical aspects of the innovation. Another important difference is that the dissemination stage monitoring must involve procedures that are possible for widespread general use and this type of monitoring procedure must become an integral part of the on-going operation of the innovation. Such a monitoring system must provide for sufficient flexibility so that some modification of the innovation in the dissemination settings, in order to allow for the uniqueness of the settting, is possible.

During the school year of 1965-66, joint planning was undertaken by the staff of the Learning Research and Development Center (LRDC) at the University of Pittsburgh and the regional educational laboratory, Research for Better Schools (RBS), to design plans to field test and disseminate the instructional innovation titled Individually Prescribed Instruction (IPI), which had undergone two years of developmental work. It was agreed that LRDC and RBS would work in partnership, with LRDC being concerned with the development and refinement of the IPI system and RBS with in-service teacher training, demonstration, and dissemination. Both organizations would actively participate in the field testing of the system. As a result of this planning, a pilot study was initiated in which the IPI system was implemented in five elementary schools. This pilot study involved in-service teacher training experiences in the original setting in which the innovation had been developed, a limited exchange

of personnel between the experimental school and the pilot schools, and a close monitoring of the pilot schools by RBS staff who actually worked in the pilot schools for varying periods of time. It was on the basis of this initial study that a variety of in-service teacher training and monitoring strategies were originally developed.

During the 1967-68 school year, 21 schools were selected as additional settings for examining both the effectiveness of these various implementation procedures and for improving the IPI systems. The schools involved in this second field testing phase were not as highly monitored as the original five pilot schools. For example, a monitoring system was developed that provided for a systematic feedback of performance data in addition to RBS staff frequently visiting the cooperating schools. Basically two types of data were generated through these monitoring systems: (1) data for assessing the degree of implementation of the IPI system and (2) data required for revising and improving the IPI system. John Bolvin will discuss in his paper some of the types of information collected for revising and improving the system.

On the basis of these two initial studies a more expanded field testing program was designed for the 1968-69 school year. This expanded program provided for the inclusion of approximately 65 new schools. Because of the large number of schools included in this phase of field testing, a revised set of procedures for implementing and testing the IPI system was necessitated. As before, RBS was charged with primary responsibility for developing an in-service teacher training program, procedures for selecting the field testing settings, and the establishment of a monitoring plan for collecting information from the field testing settings. While the LRDC was primarily concerned with the development of the type of data that must be obtained from each of the schools to assess the degree of implementation achieved and for improving the IPI system. Together both organizations are studying a number of basic problems that are directly concerned with the diffusion process itself and hopefully

the model developed through this joint planning will result in a set of procedures that will greatly reduce the present time lag between the development of an innovation school utilization.

Since the actual field testing of an innovation cannot be undertaken without first successfully implementing the innovation, and since the IPI system requires extensive changes in the traditional instructional procedures, the first year has been concerned primarily with implementation. The plan of this field testing program required that the resources of five organizations be utilized in order to effectively undertake the implementation phase: the schools, cooperating regional laboratories, a publishing house (Appleton-Century-Crofts), RBS, and LRDC. The particular functions performed by each of these organizations can briefly be described as follows:

1. The schools -- The plan developed for the new expanded IPI field testing program called for the involvement of approximately 100 schools. These schools would provide the instructional resources necessary to carry out the field testing of IPI. In addition they have agreed to comply with a number of operational conditions.

2. Cooperating regional laboratories -- In order to provide assistance to schools and feedback for the field testing program, 11 educational regional laboratories have assigned monitors to the participating schools in their region.

3. Appleton-Century-Crofts -- Because of the large volume of experimental materials required and the unique inventory problems associated with the IPI instructional system, a commercial publishing house is assisting in the material publishing and distribution aspects of the program.

4. Research for Better Schools -- Having been designated as the organization responsible for eventually transferring the innovation from the experimental school to interested schools in the nation, RBS is responsible for the overall coordination of the field testing program, in-service teacher and administrator training, data collection, and monitoring activities.

5. Learning Research and Development Center -- The Center's primary role is to assist RBS in teacher training, in the development of the types of monitoring information required and to evaluate the effectiveness of the implementation of the IPI system. During the second year, the Center will be involved in assessing the operational success of the innovation and the implication these results have for the further refinement of the IPI system.

The procedures used in establishing an operational IPI field testing program included determining procedures and criteria for school selection, the administrator and teacher training program, the procurement of instructional materials, and the monitoring system. Each of these components was developed and incorporated into a total program through the combined efforts of the five groups listed above.

The resulting program was operationalized in January of 1968 at which time school districts were contacted to invite their participation in the program. Those schools invited to participate were generally from a pool of schools that had previously contacted RBS or LRDC as to the feasibility of utilizing the IPI system in their schools. Approximately 600 schools were contacted of which 93 schools both accepted the invitation and met the criteria established for participation. These 93 schools provided a sample of over 23,000 students representing a wide diversity in types of educational institutions. Bob Scanlon will discuss this selection process, the specific commitments required, and the characteristics of these schools in more detail in his presentation.

The selection of the schools were essentially completed by April and the arrangements were made with the 11 cooperating regional laboratories. These laboratories agreed to assign at least one member of the staffs to be responsible for performing monitoring functions in the participating schools in their region.

Since provisions for an efficient and feasible plan for teacher preparation are necessary for effectively disseminating the IPI system, RBS assumed the responsibility for developing an in-service teacher

training program that could be presented by one of the school districts administrators to the instructional staff of the school. As a part of this, a three week administrative workshop was prepared with materials and procedures to be used in a 50 to 75 hour teacher workshop and training course. The administrative workshops were held in the Philadelphia area and combined both classroom instruction and an internship experience. The teacher training sessions were then held during the summer months at each of the participating schools, and consultants from RBS were available to provide assistance when necessary. This procedure has the additional quality of allowing the teachers to directly relate their learning to the particular situation in which they would be working.

A monitoring system was jointly developed by LRDC and RBS that had as its central purpose the assessment of the degree to which the field testing schools were successfully implementing the IPI system. In developing this system, a careful examination was made of the procedures involved in the IPI system as evidenced by the operational model that resulted from developmental stages of the innovation. A sample of the types of questions that were generated from this examination and the types of data required to answer them are as follows:

1. Are pupils working at different rates through the curriculum? Examples of data required: number of work units successfully mastered by each pupil each semester and the frequency distribution of the number of working days required for a particular unit by school.

2. Are pupil prescriptions consistent with unit pretest performance? Example types of data required: samples of pupil prescriptions assignments and unit pretest information for each school.

A series of such questions and corresponding data requirements were specified in order to determine if a particular school had successfully replicated the IPI model. The data and information that is collected will be compared school by school to similar data collected from the five RBS demonstration schools and the Oakleaf Elementary School, the original school in which the IPI system was developed. Thus, the data

from the six schools will serve as one baseline for monitoring the procedural aspects of the IPI system in the replicated settings. It will be on the basis of this comparison that a school is judged as either operating or not operating an IPI system. RBS is also attempting to gather a variety of data during this first year to test out the feasibility of selected procedures for the second year's work, that of actual field testing the IPI systems and specifying the efficiency with this group of approximately 90 schools of its various component parts operating under a number of different conditions. Some of these initial results will be presented by Miss Weinberger.

After a list of the types of questions and the corresponding required data had been specified, RBS established a data processing network which would systematically provide status reports on the operation of each school. This report not only provides assessment information to the RBS and LRDC, but also serves as feedback to the schools.

After approximately one semester of operation during the implementation stage of the field testing program, a variety of information has been assembled concerning the schools. To date, both RBS and LRDC are reasonably satisfied with the overall plan that was developed for the field testing program and are in the process of assessing the implementation of the IPI system. It is felt that such a program of field testing is an essential aspect in the progression of an innovation from development through classroom utilization.